

Claims

1 1. In combination:

2 a fluoropolymer matrix having particles distributed
3 therein; and

4 a thermosetting resin.

1 2. The combination of claim 1, further comprising a metal
2 layer contacting the fluoropolymer matrix.

1 3. The combination of claim 1, wherein the fluoropolymer
2 matrix is nonfibrillated.

1 4. The combination of claim 1, wherein the fluoropolymer
2 matrix is polytetrafluoroethylene.

1 5. The combination of claim 1, wherein the thermosetting
2 resin includes a contrasting dye and inorganic fillers.

1 6. The combination of claim 1, wherein the thermosetting
2 resin is selected from the group consisting of
3 cycloaliphatic type epoxies, diglycidyl ethers of bisphenol
4 A, cresol novolaks, phenolic epoxies, bismaleimides,

5 polyimides, bismaleimides-triazine epoxies, and cyanate
6 ester-epoxy mixtures.

1 7. The combination of claim 1, wherein the thermosetting
2 resin is impregnated into the fluoropolymer matrix.

1 8. The combination of claim 1, wherein the particles in the
2 fluoropolymer matrix are inorganic.

1 9. The combination of claim 1, wherein the particles
2 comprise about 15 to about 95 percent of a volume of the
3 fluoropolymer matrix.

1 10. The combination of claim 1, wherein the particles have a
2 diameter of less than 10 μm .

1 11. The combination of claim 1, wherein the thermosetting
2 resin includes inorganic particles.

1 12. A device, comprising:

2 a conductive layer;

3 a polytetrafluoroethylene matrix, containing particles
4 therein, overlaying the conductive layer; and

5 a thermosetting resin, for bonding the conductive layer
6 to the polytetrafluoroethylene matrix.

1 13. The device of claim 12, wherein the
2 polytetrafluoroethylene matrix is nonfibrillated.

3 14. The device of claim 12, wherein the thermosetting resin
4 is impregnated into the polytetrafluoroethylene matrix.

5 15. The device of claim 12 wherein the thermosetting resin
6 is coated onto the conductive layer.

1 16. The device of claim 12 wherein the thermosetting resin
2 is coated onto the polytetrafluoroethylene matrix.

1 17. The device of claim 12, wherein the conductive layer is
2 copper.

1 18. The device of claim 12, wherein the thermosetting resin

2 is provided in a sheet positionable between the conductive
3 layer and the polytetrafluoroethylene matrix.

1 19. The device of claim 12, wherein the particles in the
2 polytetrafluoroethylene matrix are inorganic particles.

1 20. The device of claim 12, wherein the thermosetting resin
2 includes inorganic particles.

1 21. The device of claim 12, wherein the device is a printed
2 circuit board.

1 22. The device of claim 12, wherein the device is a chip
2 carrier.

1 *Sub*
2 *B2*
3 23. A method for forming a device, comprising the following
4 steps:

5 providing a fluoropolymer matrix having particles
6 therein;

7 providing a thermosetting resin; and

8 laminating the fluoropolymer matrix to a conductor
9 using the thermosetting resin.

1 24. The method of claim 23, wherein the fluoropolymer matrix
2 is nonfibrillated polytetrafluoroethylene.

3 25. The method of claim 23, wherein the particles are
4 inorganic particles.

5 26. The method of claim 23, wherein the thermosetting resin
6 is impregnated into the fluoropolymer matrix.

7 *Sub*
8 *B3*
9 27. The method of claim 23, wherein the thermosetting resin
10 is coated onto the conductor.

1 28. The method of claim 23, wherein the thermosetting resin
2 is coated onto the fluoropolymer matrix.

1 29. The method of claim 23, wherein the conductor is copper.

1 30. The method of claim 23, wherein the thermosetting resin
2 is provided in a sheet that is positioned between the
3 fluoropolymer matrix and the conductor.

1 31. The method of claim 23, wherein the thermosetting resin
2 includes a contrasting dye.

1 32. The method of claim 23, wherein the device is a printed
2 circuit board.

1 33. The device of claim 23, wherein the device is a chip
2 carrier.

1 34. A method for forming a device, comprising the following
2 steps:

3 providing a fluoropolymer matrix having particles
4 therein;

5 coating the fluoropolymer matrix with a thermosetting
6 resin; and

7 laminating the coated fluoropolymer matrix to a
8 conductor.

5b
1057
1 35. The method of claim 34, wherein the thermosetting resin
includes solvent.

2 36. The method of claim 35, further comprising the step of
3 heating the coated fluoropolymer matrix to remove the
4 solvent from the thermosetting resin, prior to the
5 laminating step.

1 37. The method of claim 34, further comprising the step of
2 subjecting the fluoropolymer matrix to a plasma process,
3 prior to the coating step.

1 38. The method of claim 34, wherein the fluoropolymer matrix
2 is a nonfibrillated polytetrafluoroethylene.

1 39. The method of claim 34, wherein the thermosetting resin
2 contains about 30-75 percent solids.

1 40. The method of claim 34, wherein the laminating step
2 comprises applying heat and pressure.

1 41. The method of claim 40, wherein the heat is applied to
2 about 120-250° C during the laminating step.

1 42. The method of claim 40, wherein the pressure is applied
2 to about 100-700 PSI during the laminating step.

1 43. The method of claim 34, wherein the fluoropolymer matrix
2 is impregnated with the thermosetting resin, prior to the
3 providing step.

1 44. The method of claim 34, wherein the conductor is copper.

1 Sub 45. The method of claim 34, further comprising the steps of:
2 B7 coating the conductor with the thermosetting resin,
3 7 prior to the laminating step; and
4 heating the coated conductor to remove the solvent from
5 the thermosetting resin.

add p8 7

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100